



Newsletter from the Department of Animal Sciences and Industry  
 213 Weber Hall - Kansas State University - Manhattan, KS 66506  
 785-532-6131 – [www.asi.ksu.edu](http://www.asi.ksu.edu)

## UPCOMING EVENTS...

October 2012

### News from KSU Animal Sciences

#### In This Issue

- Upcoming Events
- Management Minute
- Feedlot Facts
- 2012 KSU Cattlemen's Day Article Featured
- 2011 KSU Swine Day Articles Featured
- Faculty Spotlight
- What Producers Should Be Thinking About...

#### We Need Your Help!

Please send questions, comments or ideas for future newsletter topics to [lschrein@ksu.edu](mailto:lschrein@ksu.edu) or call (785) 532-1267.

☞ The **SowBridge Breeding Herd Education Series** is being offered for 2012-2013. The SowBridge program is designed to deliver timely and relevant information in a convenient manner. Programs are delivered over the mid-day period to maximize learner participation while minimizing interruption of the normal daily work schedule. This program is designed to increase dissemination of information that will hopefully improve understanding and productivity in breeding herds and farrowing systems.

This year-long program is offered by subscription only with an October 15, 2012, deadline to ensure participants will receive materials for the first session on November 7, 2012. Sessions are held the first Wednesday of each month and will begin at 11:35 a.m. central time and last approximately 45 minutes. Following each session, participants can continue to ask questions, or respond, to other producer questions, via the [sowbridge@lista.umn.edu](mailto:sowbridge@lista.umn.edu) discussion group.

The SowBridge Series cost of \$250 includes all 12 sessions and supporting materials. For a complete schedule and registration form, visit [KSUswine.org](http://KSUswine.org). For more information, contact Joel DeRouchey (785-532-2280; [jderouch@ksu.edu](mailto:jderouch@ksu.edu)).

☞ The **2012 Dairy Cattle Reproduction Council Annual Meeting** will be held November 8-9, 2012 at the Hyatt Regency, Sacramento, California. The two-day event will continue to expand the DCRC's reach to producers, veterinarians, academia and industry professionals, presenting usable information that can be implemented on the dairy. To register for the convention and more information, go to [www.dcrcouncil.org](http://www.dcrcouncil.org).

The Dairy Cattle Reproduction Council (DCRC) is focused on bringing together all sectors of the dairy industry-producers, consultants, academia and allied industry professionals-for improved reproductive performance. DCRC provides an unprecedented opportunity for all groups to work together to take dairy cattle reproduction to the next level.

For more information, contact Dr. Jeff Stevenson ([jss@k-state.edu](mailto:jss@k-state.edu); 785-532-1243).

- ☞ The **2012 KSU Swine Day** will be held Thursday, November 15, at the KSU Alumni Center. The schedule for the day includes:
  - 8:00 a.m. – 5:00 p.m. Trade Show
  - 9:45 a.m. Welcome - *Dr. Ken Odde, Department Head, Animal Sciences and Industry*
  - 10:00 a.m. Current K-State Swine Research to Help Improve Net Return of a Swine Business  
*KSU Swine Team*
  - 11:15 a.m. The Role of Host Genetics for Improved Resistance to PRRS  
*Dr. Bob Rowland, KSU Diagnostic Medicine and Pathobiology*
  - 11:45 a.m. Lunch with Trade Show
  - 1:15 p.m. My Vision for Job Creation on Animal Agriculture –  
*Governor Sam Brownback (Invited)*
  - 2:00 p.m. Current K-State Swine Research to Help Improve Net Return of a Swine Business  
*KSU Swine Team*
  - 3:30 p.m. Reception with K-State Ice Cream

Pre-registration fee is \$25 per participant by November 9; with registration at the door \$35 per participant. There is no charge for any students if they are pre-registered. Visit [www.KSUswine.org](http://www.KSUswine.org) for complete schedule and registration information. For more information, contact Jim Nelssen ([jnelssen@ksu.edu](mailto:jnelssen@ksu.edu); 785-532-1251).

- ☞ The **2012 Applied Reproductive Strategies in Beef Cattle Workshop** will be held in Sioux Falls, SD on December 3<sup>rd</sup> and 4<sup>th</sup>. This year's conference will focus on how we utilize advancing technologies to improve reproductive efficiencies, profitability, and the product that we all enjoy so well (BEEF)! This is a tremendous opportunity to hear 27 speakers from across the U.S. and Canada speak on topics including how to profit from implementing these technologies, and the latest research in the fields of reproduction, nutrition, and genetics. This conference is geared to veterinarians and producers, so all the speakers will be addressing how you can use these areas on cattle operations. The full program and list of speakers is available at <http://muconf.missouri.edu/ARSBC-SouthDakota>. In addition to the outstanding speakers we have on the program, there will also be a large tradeshow with booths from all sponsors. For more details, contact Sandy Johnson, [sandyj@ksu.edu](mailto:sandyj@ksu.edu).
- ☞ The 2013 **KSU Swine Profitability Conference** will be held on February 5, 2013, in Forum Hall of the K-State Student Union. Featured speakers include Dr. Jeff DeMint, Bern-Sabetha Veterinary Clinic; Roy Henry, Longford, KS; Chris Novak, CEO, National Pork Board; Ron Plain, University of Missouri; and Trent Loos, Loos Tales. Watch for more information at [www.KSUswine.org](http://www.KSUswine.org). For more information, contact Jim Nelssen (785-543-1251; [jnelssen@ksu.edu](mailto:jnelssen@ksu.edu)).
- ☞ Mark February 16, 2013 on your calendar for the **KSU Junior Swine Producer Day**. Watch for more details. For more information, contact Joel DeRouchey (785-532-2280; [jderouch@ksu.edu](mailto:jderouch@ksu.edu)) or Kristine Clowers (785-532-1264; [clowers@ksu.edu](mailto:clowers@ksu.edu)).

CALENDAR OF UPCOMING EVENTS		
Date	Event	Location
October 15, 2012	Deadline to ensure materials for SowBridge Breeding Herd Education Series	
November 8-9, 2012	Dairy Cattle Reproduction Council Annual Meeting	Sacramento, CA
November 15, 2012	KSU Swine Day	Manhattan
December 3-4, 2012	Applied Reproductive Strategies in Beef Cattle Workshops	Sioux Falls, SD
February 5, 2013	KSU Swine Profitability Conference	Manhattan
February 16, 2013	Junior Swine Producer Day	Manhattan

# WHAT'S NEW . . . .

## **Management Minute** **“Outside the Box”**

### ↪ **Management Minute** – Chris Reinhardt, Ph.D., Extension Feedlot Specialist *“Outside the Box”*

It seems like every management book or retreat focuses on “thinking outside the box”. And during stable economic times, that’s more of a luxury and a way to prepare for the future, kind of like saving for a rainy day.

But because of the drought, for beef producers getting outside the box is no longer a luxury or the ubiquitous management mantra, it’s a necessity!

We often hear things that fly in the face of convention and quickly dismiss them as extreme. But necessity is the mother of invention, and desperate times call for desperate measures. When the going gets tough, etc.

One idea that K-State Extension Cow/Calf Specialist Dr. Bob Weaber offered up at the recent K-State Beef Conference was: “Cull your replacements.” WHAT?!!!

Normally, yearling and 2-year-old heifers represent future genetic progress and the opportunity to cull less productive older females from the gene pool. That’s all still true; however, yearlings will eat a lot of feed over the next 2 years before providing any weaned calf income, and heifers will wean a lighter calf than an older cow, simply because they do not have mature reproductive or lactation systems, and because they are still using a portion of nutrient intake for growth.

Here are some sobering figures from USDA/NAHMS: 93% of cows exposed to a bull calf vs. 89% of heifers. 96% of bred cows wean a calf vs. 89% of bred heifers. 17% of heifers require assistance during calving vs. only 2% of mature cows.

These are tough numbers to swallow. But if we figure each weaned calf will be worth \$900 gross, and if we held onto the 30% mature females we would have culled instead of replacing them with young stock, we can expect to wean 2 more calves per 100 cows (96 vs. 89% weaning rate x 30 females) for \$1,800 increased gross return (perhaps more if we include the added weight for calves from mature females vs. those from heifers)---enough to pay for 3-4 cows’ entire winter feed bill.

This is certainly not the ideal path to genetic progress. However, 2 facts seem evident: demand for beef is growing and supply of calves is shrinking, which means the producer who can keep the factory together over the next few years should reap substantial rewards. But they will definitely need to get outside the box to reach that goal.

For more information, contact Chris at 785-532-1672 or [cdr3@ksu.edu](mailto:cdr3@ksu.edu).

## **Feedlot Facts** **“The Other Side of Preconditioning”**

### ↪ **Feedlot Facts** – Chris Reinhardt, Ph.D., Extension Feedlot Specialist *“The Other Side of Preconditioning”*

When we discuss preconditioning, we almost universally think about pre-weaning vaccination. This is probably a mistake.

While on their dam, calves over 3 weeks old rarely get sick. The national cow herd has about 3.5% calf mortality rate, and those losses are split fairly evenly between the 1<sup>st</sup> 24 hours after birth, the 1<sup>st</sup> 3 weeks after birth, and the rest of the pre-weaning phase. So there is about 1% mortality in calves greater than 3 weeks old. About 1/3 of this loss is due to respiratory problems; the rest is spread out due to digestive problems (22%), weather (10%), lameness, predators, and other causes.

The reason for this 99% success rate, in older calves, is that calves are well-suited for the environment in which they’re living. Aside from the occasional late blizzard, calves aren’t stressed environmentally; aside from the recent drought, calves have nearly all their nutrients provided in abundance from milk and grass; and immune challenge rarely exceeds the ability of the calf to suppress the challenge.

So that begs the question: If we have so few health challenges in the wide-open world of the home ranch, why do some calves undergo such severe health challenges after weaning and shipment to the feedyard?

One answer, covered recently is stress for which the calves are not adequately or properly prepared. But another important way we can prepare calves for life off the home ranch is through proper pre-weaning nutrition.

## **Feedlot Facts – “*The Other Side of Preconditioning*” (cont.)**

In some production years, calves are weaned because it quits raining. And we often wean 6 weeks early but we're already 6 weeks late, nutritionally speaking. The cows may have dried off and the calves may have been sliding sideways (or even backwards) nutritionally for weeks when we finally get them to market. Add this to multiple transitional stressors, and this is a good recipe for a compromised immune system.

To avoid this situation, keep a balanced, palatable, loose mineral near water sources to make sure calves are getting adequate trace minerals. Although creep feeding sometimes does not provide a competitive cost of gain, providing a palatable source of energy and protein will ensure that calves maintain the ability to mount an immune response when the challenge occurs, and the creep feeder can be pulled into a dry lot to ease the transition from pasture to dry lot and bunk feeding.

Once again, the rancher who can capture some of the efficiencies provided by weaning on the ranch of origin may have an advantage over those forced into “blacktop weaning”. Just be sure your marketing plan is designed to capture the full economic premiums available for value-added calves, in order to offset the added expense of preparing the calves for life off the ranch.

For more information contact Chris at [cdr3@ksu.edu](mailto:cdr3@ksu.edu).

↪ **New SE Area Beef Systems Specialist** - We are pleased to announce that Jaymelynn Farney has accepted the SE Area Beef Systems Specialist position. She will be located at the Southeast Area Extension Office in Parsons, KS. Jaymelynn recently received her Ph.D. at Kansas State University with Dr. Barry Bradford as her major advisor. She received her Masters at Oklahoma State University and her B.S. at Kansas State University. Jaymelynn received the 2012 Corah Outstanding PhD Beef Student Award and the 2010 NMPF National Dairy Leadership Scholarship Program award. We are excited about the enthusiasm and excitement for beef programs that Jaymelynn brings to K-State. Jaymelynn began her position at K-State on October 1, 2012.

↪ **Feed Mill Manager position** – Kansas State University Department of Animal Sciences and Industry is looking for a Feed Mill Manager. This is a full-time, benefits-eligible position. B.S. in Animal Sciences, Grain Sciences or related field by the date of hire is required as well as previous experience in feed manufacturing and processing, and the ability to obtain a CDL license. Working knowledge of feed ingredients and feed processing equipment and prior supervisory experience is preferred. The feed mill manager will be responsible to procure feed ingredients, receive feed orders from livestock units, schedule feed processing and delivery, and maintain computerized records of sales and financial management of the feed mill operation. View complete position announcement at: <http://www.asi.ksu.edu/positions>. Review of applications begins October 29, 2012, and continues until a suitable candidate is identified. Background check required.

↪ **IRM Redbooks for Sale** – The 2013 IRM Redbooks are in and will be sold on a first come first serve basis. The price of the redbooks will be: For orders of less than 10 = \$5.25/book; Orders of 10 or more = \$5.00/book which includes postage. To order your supply of redbooks, please contact Lois (lschrein@ksu.edu; 785-532-1267).

↪ **High-Grading Angus Steers Demonstrate the Greatest Average Daily Gain** – Closeout data relating to health, feedlot performance, and carcass data were evaluated for 17,919 Angus steers fed in a single feedlot in southwest Kansas from 1997 to 2007. Multiple treatments for morbidity resulted in poorer average daily gain and a decreased percentage of Choice carcasses. In addition, non-treated steers that graded Prime and Choice had higher average daily gain than those that graded Select or below.

***Bottom Line***....Ranchers do not need to choose between performance and grade. Avoiding factors that decrease performance, such as disease or nutrient restriction, also improves carcass quality. View the complete research report at [www.asi.ksu.edu/cattlemensday](http://www.asi.ksu.edu/cattlemensday). For more information contact, Chris Reinhardt (785-532-1672; [cdr3@ksu.edu](mailto:cdr3@ksu.edu)).

↪ **Feeding Crude Glycerin During the Background Phase Improves Subsequent Feedlot Performance and Carcass Characteristics** – Crude glycerin was included in backgrounding diets at 0, 4, and 8% (dry basis) and fed to 368 growing heifers. Animals were randomly allocated to 48 pens with 7 or 8 head per pen, providing a total of 16 pens per treatment. After 90 days backgrounding, cattle were transitioned to a common finishing diet without glycerin. Feedlot and carcass data were collected.

***Bottom Line***....Crude glycerin fed during the growing period improved subsequent finishing performance and carcass characteristics. View the complete research report at [www.asi.ksu.edu/cattlemensday](http://www.asi.ksu.edu/cattlemensday). For more information contact, Jim Drouillard (785-532-1204; [jdrouill@ksu.edu](mailto:jdrouill@ksu.edu)) or Dale Blasi (785-532-1427; [dblasi@ksu.edu](mailto:dblasi@ksu.edu)).

↪ **Utilizing Vaccination for Porcine Circovirus Type 2 as a Tool to Aid Elimination of PCV2 from Swine Populations** - A total of 928 pigs from the Swine Teaching and Research Centers at Michigan State University (MSU) and Kansas State University (KSU) and a Kansas commercial farm were used during a 3-year study to determine whether circovirus vaccination influenced porcine circovirus type 2 (PCV2) circulation within a herd and could be used as a tool to eliminate PCV2 from PCV2-positive swine herds. Infection with PCV2 was

confirmed in both university herds before circovirus vaccine introduction. After vaccination implementation, vaccinated barrows from consecutive groups were serially tested for viremia. Follow-up antibody and growth testing with vaccinated and non-vaccinated pigs was performed at the KSU farm. In a circovirus-vaccinated commercial herd, testing of non-circovirus-vaccinated pigs for viremia was completed. Environmental swab samples were collected from facilities at the KSU and commercial farms for PCV2 DNA detection. Sera from 0 of 9 MSU vaccinated-cohorts and 3 of 10 KSU vaccinated-cohorts had detectable PCV2 DNA. From follow-up testing, a PCV2 antibody rise after vaccination was detected for vaccinated pigs with no detectable antibody rise for non-vaccinated pigs.

**Bottom Line...**Overall growth rate of non-vaccinated pigs tended to increase compared with vaccinated pigs. Non-vaccinated pigs became PCV2 viremic at the commercial farm. Viral DNA was detected in the environment of the commercial farm but not in the KSU facilities. Therefore, circovirus vaccine can affect viral circulation on farms but would need to be used in conjunction with other management practices to eliminate PCV2 from most swine populations. More information is available on this experiment and others in the KSU Swine Day Report at [www.KSUswine.org](http://www.KSUswine.org). (This study conducted by M.L. Potter, S.S. Dritz, R.A. Hesse, R.R.R. Rowland, J.C. Nietfeld, R. Oberst, S.C. Henry, L.M. Tokach, M. Hays, A. Fuller, B.E. Straw and R.O. Bates.)

↳ **Effects of Adding Cracked Corn to a Pelleted Supplement for Nursery and Finishing Pigs** - Three experiments were conducted to determine the effects of supplementing cracked corn into diets of nursery and finishing pigs. In Exp. 1, 144 pigs were used in a 28-d trial. Pigs (PIC TR4 × 1050; initially 16.5 lb) were weaned and allotted with 6 pigs per pen (3 barrows and 3 gilts) and 6 pens per treatment. All pigs were fed a common diet for 7 d postweaning and the experimental diets for the next 28 d. Treatments were corn-soybean meal-based in the form of mash, pellets, and pellets with 100% of the corn either ground (618 µm) or cracked (3,444 µm) and blended into the diet after the rest of the formulation (the supplement) had been pelleted. Overall (d 0 to 28), ADG and F/G improved when pigs were fed the mash control compared to the pelleted diets; however, this response was caused by the poor performance of pigs fed the supplement treatments, with the pigs fed the complete pellets having improved ADG and F/G compared with pigs fed the pelleted supplement blended with ground and cracked corn. Finally, pigs fed the supplement blended with cracked corn had numerically lower ADG and poorer F/G compared to those fed the supplement blended with ground corn. In Exp. 2, 224 nursery pigs (initially 16.3 lb) were used with 7 barrows or 7 gilts per pen and 8 pens per treatment. Treatments were corn-soybean meal-based and fed as mash, pellets, and pellets with 50% of the corn either ground (445 µm) or cracked (2,142 µm) and blended with the pelleted supplement. Pigs fed mash had improved ADG and F/G compared with pigs fed the other treatments; however, this resulted from adding ground or cracked corn outside the pellets. In Exp. 3, 252 finishing pigs (initially 88.2 lb) were used with 7 pigs per pen and 9 pens per treatment. The treatments were the same as Exp. 2. Pigs fed mash had lower ADG compared with pigs fed diets with pellets. Pigs fed complete pellets had improved ADG and F/G compared with pigs fed corn and the pelleted supplement. Also, pigs fed the supplement blended with cracked corn had greater ADG than pigs fed the supplement blended with ground corn.

**Bottom Line....**Pelleting the diet led to an increase in ulceration scores; however, these negative effects on ulcer scores were reduced by cracking 50% of the corn and adding it post-pellet. More information is available on this experiment and others in the KSU Swine Day Report at [www.KSUswine.org](http://www.KSUswine.org). (This study conducted by C. B. Paulk, J. D. Hancock, A. C. Fahrenholz, J. M. Wilson, D. D. Cook, L. J. McKinney, K. C. Benhke, J. C. Ebert, J. J. Ohlde, and J. C. Nietfeld.)

↳ **Determining the Effects of L-Tryptophan Addition to Diets Containing 30% Dried Distillers Grains with Solubles on Finishing Pig Growth Performance** - A total of 845 pigs (PIC 380 × Monsanto; initially 163 lb) were used in a 61-d study to determine the effects of L-tryptophan addition to diets containing 30% dried distillers grains with solubles (DDGS) on the growth performance of finishing pigs reared in a commercial environment. Pens of pigs were balanced by initial weight and randomly allotted to 1 of 5 dietary treatments in a completely randomized design with 25 to 30 pigs per pen and 6 replications per treatment. Treatments included 4 standardized ileal digestible (SID) tryptophan:lysine ratios (15, 17, 19, and 21% of lysine) using crystal-line L-tryptophan added to the 15% diet. An additional diet used soybean meal as a source of tryptophan to provide a SID tryptophan:lysine ratio of 21%. Overall (d 0 to d 61), increasing the SID tryptophan:lysine ratio did not affect growth performance. Pigs fed a diet containing a 21% SID tryptophan:lysine ratio with added soybean meal as the tryptophan source had poorer F/G compared with pigs fed the diet with a 21% SID tryptophan:lysine ratio from crystalline tryptophan. Although not significant, pigs fed the 21% SID tryptophan:lysine ratio with soybean meal as the tryptophan source had a 3% reduction in ADG compared with those fed a SID tryptophan:lysine ratio of 21% using L-tryptophan. Otherwise, ADG and ADFI were similar across all treatments.

**Bottom Line...**In conclusion, increasing the SID tryptophan:lysine ratio from 15 to 21% by adding crystalline tryptophan (L-tryptophan) did not influence finishing pig growth performance. More information is available on this experiment and others in the KSU Swine Day Report at [www.KSUswine.org](http://www.KSUswine.org). (This study conducted by S. Nitikanchna, M. D. Tokach, S. S. Dritz, R. D. Goodband, J. M. DeRouchey, J. L. Nelssen, and J. Usry.)

# AS&I Faculty Spotlight



**Mike Brouk (mbrouk@k-state.edu; 785-532-1207)**  
**Associate Professor/Extension Dairy Specialist**

Micheal J. Brouk was born November 15, 1962, in Franklin County, Missouri. He attended Linn R-2 Schools graduating in May 1981. Following high school graduation, he attended the University of Missouri-Columbia majoring in agronomy and dairy science and received the Bachelor of Science degree in Agriculture in May 1985. From 1976 to 1984, he was also an active partner in the family grain farm located in Osage County, Missouri. The University of Missouri-Columbia employed Mike as a Research Specialist for two years after he completed his undergraduate program. The research projects involved the utilization of dairy processing plant waste as a fertilizer for forage crops and as a protein and mineral supplement for livestock. He then began a Master of Science degree program under Dr. Ron Belyea at the University of Missouri-Columbia. The title of his thesis was "Chewing Behavior and Digestion of Alfalfa Forage." Following completion of his M.S. degree, Mike accepted a position with Cenex/Land O'Lakes in southwestern Minnesota. He worked as a Livestock Production Specialist developing nutrition and management programs for dairy and beef producers. After two years with LOL, he entered a doctoral program under the direction of Dr. David Schingoethe at South Dakota State University. His dissertation topic was "Net Energy of Lactation and Ruminant Degradability of Wet Corn Distillers Grains." Following completion of the Ph.D. in Animal Sciences he joined the teaching and research staff of South Dakota State University in January 1994. Mike was responsible for teaching undergraduate dairy management, nutrition, breeding and cattle evaluation courses as well as developing a dairy cattle nutrition research project.

Mike returned to the University of Missouri-Columbia in August of 1996 as an Extension Specialist with Commercial Agriculture Program. He was responsible for developing state wide extension programs in the areas of dairy cattle nutrition, forage systems, replacement heifer development and dairy cattle management. He joined the faculty of Kansas State University in December of 1998 as a State Dairy Extension Specialist where he holds a 30% teaching and 70% extension appointment. His current responsibilities include development of programs in dairy cattle nutrition, management, cow comfort, replacement heifer development, dairy expansion and heat stress abatement. He is currently involved in several research projects evaluating various heat stress abatement methods in commercial dairy herds.

Mike and his wife Michelle together with their five children, Megan, Morgan, Miranda, Matthias, and Marissa reside near Manhattan, KS.



**Barry Bradford (bbradfor@k-state.edu; 785-532-7974)**  
**Associate Professor/Dairy**

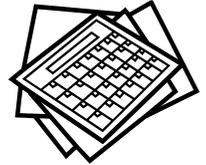
Barry Bradford was raised on a cow/calf operation in southwest Iowa and was heavily involved in the operation from a young age. He received his bachelor's degree at Iowa State University, then went on to obtain his doctorate in animal nutrition at Michigan State University, where his research focused on metabolic regulation of feed intake in dairy cattle. In 2006, Bradford began his current position at Kansas State University with a 60% research, 40% teaching appointment.

Bradford oversees an active research program focused on uses of alternative feedstuffs in dairy nutrition, transition cow health, and physiological regulation of carbohydrate and lipid metabolism. He also teaches over 170 students per year as an instructor in Fundamentals of Nutrition (ASI 318), Physiology of Lactation (ASI 601), and Dairy Cattle Nutrition (ASI 681).

Barry lives in Manhattan with his wife, Sarah, and their children, Hannah, Kiernan, and Lydia. The Bradfords love spending time outdoors, reading, and traveling whenever possible.

# What Producers Should Be Thinking About.....

## WHAT PRODUCERS SHOULD BE THINKING ABOUT IN DECEMBER.....



### **BEEF** -- *Tips by Dale Blasi, Extension Beef Specialist*

#### **Cow herd management for spring-calving cows**

- In late fall and early winter, start feeding supplement to mature cows using these guidelines:
  - Dry grass — 1-2 pounds (lb.) per day of a 40% crude protein (CP) supplement
  - Dry grass — 3-4 lb. per day of a 20% CP supplement
  - Dry grass — 10 lb. good nonlegume hay, no supplement needed
- Compare supplements based on cost per pound of nutrient.
- Utilize crop residues.
- Strip-graze or rotate cattle to improve grazing efficiency.
- Cows in average body condition can be grazed at 1-2 acres per cow for 30 days, assuming normal weather. Available forage is directly related to grain production levels.
- Limiting nutrients are usually rumen degradable protein, trace minerals and vitamin A.
- Control lice.

#### **General management**

- Document your cost of production by participating in Standardized Performance Analysis (SPA) programs.
- Review management decisions; lower your costs per unit of production.
- Check your financial management plan and make appropriate adjustments before the end of the year.

*We need your input! If you have any suggestions or comments on **News from KSU Animal Sciences**, please let us know by e-mail to [lschrein@ksu.edu](mailto:lschrein@ksu.edu), or phone 785-532-1267.*